Reagents

Green chemistry

For decades, the Tintometer® Group has been known as a producer of reagents for water analysis, which are supplied under the brand name Lovibond®.

The wide range of applications requires different types of reagents.

Also, users tend to have personal preferences as to which dosage system to use.

Our broad product range covers blistered tablet reagents, powder reagents packed in aluminium foil and precise dosing liquid reagents in dropper bottles.

With all our reagents, we strive to keep the formulations as environmentally friendly as possible. Hazardous substances are – whenever possible – replaced by harmless and functionally identical substitutes.

Where the required chemistry of the detection method makes the use of these substances absolutely necessary, the concentration levels are lowered to the minimum rate, without compromising the accuracy of the analysis results.

For example, our reagents for Pool & Spa water testing are free from boric acid, which is still frequently being used as an additive in the industry. The European Union (EU) has classified boric acid as a dangerous substance.

The Lovibond® DPD No. 1 tablets are not only 100% free from boric acid, they also guarantee compliance with the buffering effect required by the standard.
This characteristic makes the tablet a leader in its field.

Tablet reagents

Our test tablets are manufactured in Germany under tightly controlled conditions on most modern machinery.

Maintaining the highest quality standards permits Tintometer to guarantee our tablet reagents for a minimum of 5 years, and some for as long as 10 years.

We can make this promise because each tablet is hermetically sealed within an individual aluminium foil pocket, protecting against challenging environmental conditions. This packaging keeps each tablet in perfect condition, right up until the time it is needed by the user.

Test tablets remain the most consistent and reliable reagent format available, consistently outperforming other reagent formats, and delivering maximum accuracy for the user.

The aluminium foil blister packaging brings added convenience to the tradition of protection achieved in the Lovibond® long established tablet production technology.

With the blister strip, the user just pushes the tablet through the protective foil, straight into the sample. Simple, time-saving and practical.

This type of packaging, long established in pharmaceutical applications, combines all the advantages of protective foil, with convenience for the user.

There are no safety risks if the tablets are used in line with the instructions supplied.
Safety data sheets are available for all reagents.

Specifications and Certificate of Analysis

To express the high quality standard of Lovibond® tablet reagents, specifications for each type of tablet as well as a "Certificate of Analysis" for each lot is available in the down-load area at www.lovibond.com.

Tube tests

Lovibond® tube tests enable the user to easily perform highly sensitive and precise water testing.

When using tube tests measurement is considerably faster and easier, particularly in the case of standard and serial tests.

The tube tests contain a precisely measured amount of reagent, thereby avoiding the presence of superfluous chemicals and optimising test safety.

Up to six different measuring ranges are available for the various tests.

The tubes are made of special optical glass with a 16 mm in diameter. They are supplied in a storage and dispatch box together with the digestion or auxiliary reagents. This packaging unit contains 24 or 25 reaction vials and up to 2 zero vials for photometer system calibration.

Liquid reagents

As a rule, liquid reagents do not consist of a single preparation but comprise several components that need to be added to the sample in a certain order. As both the size and the number of drops have a decisive effect on the resultant colour complex, the reagents need to be added with a high degree of precision.

The shelf life of liquid reagents is reduced by temporary contact with oxygen in the air when the bottle is opened as well as by unsuitable storage environments (presence of sunlight or high temperatures). Provided that the bottles are stored within the temperature range +6°C to +10°C, the Lovibond® DPD and Phenol Red solutions can be used for a period of two years from the production date.

VARIO Powder Packs

The fast and easy use of VARIO Powder Packs has made them extremely popular for water testing applications in many countries throughout the world.

The Lovibond® Powder Pack programme provides users with a real alternative to existing measurement systems.

The Vario Powder Packs are produced to the same high quality standards that have made Tintometer's tablet reagents so successful for several decades.

Parameters from aluminium and chlorine through to sulphate are just some of the well-known tests that are included in the VARIO Powder Pack range.

Their chemical properties make them compatible to Hach® devices.*

Detailed information see pages 100 - 107

Membrane filter set

For use when preparing samples for photometric measurements

Advantages

- removes turbid materials from samples
- differentiates between dissolved and total substances
- 0.45 µm mesh meets the requirements of the official German unitary procedure for water testing

To prevent the effects of light scatter, it must be ensured that all turbid materials are removed from the sample before photometric measurements are carried out. This can be achieved with the Lovibond® membrane filter set.

Where certain methods are employed (e.g., iron, manganese, CSB, etc.) a membrane filter set must be used to differentiate samples in terms of dissolved and total substances. The filter mesh size of 0.45 µm is in accordance with the official German unitary procedure for water testing.

Order code: 36 61 50
(covers 25 x 0.45 µm membrane filters and two 20 ml syringes)

* HACH® is a registered trademark of Hach Company, Loveland, Colorado. The use of the HACH® trademark does not imply any affiliation with or approval by Hach Company regarding the formulation, testing or compatibility of these products for use in HACH® brand spectrophotometers or other devices or systems.

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Alkalinity-M	5 - 200 mg/l	610	610	610	610	610	610	615	Acid/Indicator [1, 2, 5]	24 mm ø
Alkalinity-M HR	5 - 500 mg/l	-	-	610	610	610	610	615	Acid/Indicator [1, 2, 5]	24 mm ø
Alkalinity-P	5 - 300 mg/l	-	-	560	560	-	-	551	Acid/Indicator [1, 2, 5]	24 mm ø
Aluminium VARIO	0.01 - 0.25 mg/l	530	-	530	530	530	-	535	Eriochrome cyanine R [2]	24 mm ø
Aluminium	0.01 - 0.3 mg/l	530	-	530	530	530	-	535	Eriochrome cyanine R [2]	24 mm ø
Ammonia	0.02 - 1 mg/l	610	-	610	610	610	-	676	Indophenole blue [2, 3]	24 mm ø
Ammonia VARIO	0.01 - 0.8 mg/l	660	-	660	660	-	-	655	Salicylate [2]	24 mm ø
Ammonia VARIO LR	0.02 - 2.5 mg/l	-	-	660	660	-	-	655	Salicylate [2]	16 mm ø
Ammonia VARIO HR	1 - 50 mg/l	-	-	660	660	-	-	655	Salicylate [2]	16 mm ø
Arsenic (III, V)	0.02 - 0.6 mg/l	-	-	-	-	-	-	507	Silver diethyldithiocarbamate[1]	20 mm □

MSDS (Material Safety Data Sheets): www.lovibond.com

For other reagent quantities please see our current price list.

Legend

[1] Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlamm- Untersuchung
[2] Standard Methods for the Examination of Water and Wastewater, 18th Edition; 1992
[3] Photometrische Analysenverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart; 1989
[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980
[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
$CaCO_3$	ALKA-M-PHOTOMETER	Tablet / 100	51 32 10 BT
$CaCO_3$	ALKA-M-HR-PHOTOMETER	Tablet / 100	51 32 40 BT
$CaCO_3$	ALKA-P-PHOTOMETER	Tablet / 100	51 32 30 BT
Al	VARIO Aluminum ECR/F20 VARIO Aluminum Hexamine/F20 VARIO Aluminum ECR Masking Reagent	Powder Pack / 100 Powder Pack / 100 Liquid reagent / 25 ml **Set**	 53 50 00
Al	ALUMINIUM No. 1 ALUMINIUM No. 2 Combi pack# ALUMINIUM No.1 / No.2 Combi pack# ALUMINIUM No.1 / No.2	Tablet / 100 Tablet / 100 each 100 each 250	51 54 60 BT 51 54 70 BT 51 76 01 BT 51 76 02 BT
NH_4 - N	AMMONIA No. 1 AMMONIA No. 2 Combi pack# AMMONIA No.1 / No.2 Combi pack# AMMONIA No.1 / No.2 Ammonia conditioning powder (for seawater)	Tablet / 100 Tablet / 100 each 100 each 250 Powder / 15 g / 50 Tests	51 25 80 BT 51 25 90 BT 51 76 11 BT 51 76 12 BT 46 01 70
NH_4 - N	VARIO Ammonia Salicylate F10 VARIO Ammonia Cyanurate F10	Powder Pack / 100 Powder Pack / 100 **Set**	 53 55 00
NH_4 - N	VARIO Ammonia Salicylate F5 VARIO Ammonia Cyanurate F5 VARIO Am Diluent Reagent LR VARIO Deionised Water (for Zero)	Powder Pack / 50 Powder Pack / 50 Reaction tube / 50 Bottle, 100 ml **Set** (Tube test)	 53 56 00
NH_4 - N	VARIO Ammonia Salicylate F5 VARIO Ammonia Cyanurate F5 VARIO Am Diluent Reagent HR VARIO Deionised Water (for Zero)	Powder Pack / 50 Powder Pack / 50 Reaction tube / 50 Bottle, 100 ml **Set** (Tube test)	 53 56 50
As	for chemicals see manual, reagents at specialized chemistry dealer		

[a] determination of free, combined and total
[b] Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
[c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75)
[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
[j] Vacu-vials® is a Chemetrics Trademark
[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Biguanide (see PHMB)										
Boron	0.1 - 2 mg/l	-	-	430	430	-	-	450	Azomethine [3]	24 mm ø
Bromine	0.05 - 13 mg/l 0.05 - 1 mg/l 0.1 - 3 mg/l 0.05 - 6.5 mg/l	530 - - -	530 - - -	530 - - -	530 - - -	530 - - -	530 - - -	- 510 510 510	DPD [5]	24 mm ø 50 mm □ 10 mm □ 24 mm ø
Bromine Powder	0.05 - 4.5 mg/l	-	-	530	530	-	-	-	DPD [1, 2]	24 mm ø
Cadmium (Cd^{2+})	0.025 - 0.75 mg/l	-	-	-	-	-	-	525	Cadion	16 mm ø
Chloride	0.5 - 25 mg/l 5 - 250 mg/l [i)]	530 530	- -	530 -	530 -	- -	- -	450 -	Silver nitrate/turbidity	24 mm ø
Chloride	5 - 60 mg/l	-	-	-	-	-	-	455	Iron (III)-thiocyanate [4]	24 mm ø
Chloride	0.5 - 20 mg/l	430	-	430	-	-	-	-	Mercury thiocyanate / Iron nitrate	24 mm ø
Chlorine [a)]	0.01 - 6 mg/l 0.02 - 0.5 mg/l 0.1 - 6 mg/l 0.02 - 3 mg/l	530 - - -	530 - - -	530 - - -	530 - - -	530 - - -	530 - - -	- 510 510 510	DPD [1, 2]	24 mm ø 50 mm □ 10 mm □ 24 mm ø
Chlorine HR (DPD) [a)]	0.1 - 10 mg/l	530	530	530	530	530	530	510	DPD [1, 2]	24 mm ø

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Legend

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[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980

[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
B	BORON No. 1	Tablet / 100	51 57 90
	BORON No. 2	Tablet / 100	51 58 00BT
	Combi pack# BORON No.1 / No.2	each 100	51 76 81BT
	Combi pack# BORON No.1 / No.2	each 200	51 76 82BT
Br	DPD No. 1	Tablet / 100	51 10 50 BT
	DPD No. 3	Tablet / 100	51 10 80 BT
	Combi Pack# DPD No.1 / No.3	each 100	51 77 11 BT
	Combi Pack# DPD No.1 / No.3	each 250	51 77 12 BT
	DPD No. 1 HIGH CALCIUM [e]	Tablet / 100	51 57 40 BT
	DPD No. 3 HIGH CALCIUM [e]	Tablet / 100	51 57 30 BT
	Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e]	each 100	51 77 81 BT
	Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e]	each 250	51 77 82 BT
	DPD Nitrite	Tablet / 250	50 26 91
	GLYCINE [f]	Tablet / 100	51 21 70 BT
	Combi pack# DPD No.1 / GLYCINE	each 100	51 77 31 BT
	Combi pack# DPD No.1 / GLYCINE	each 250	51 77 32 BT
Br	Chlorine TOTAL-DPD/F10	Powder Pack / 100	53 01 20
Cd	Spectroquant® 1.14834.0001[d]	Tube test / 25	42 07 50
Cl	CHLORIDE T1	Tablet / 100	51 59 10 BT
	CHLORIDE T2	Tablet / 100	51 59 20 BT
	Combi pack# CHLORIDE T1 / T2	each 100	51 77 41 BT
	Combi pack# CHLORIDE T1 / T2	each 250	51 77 42 BT
Cl	Chlorid-51 / Chlorid-52	Reagent test (Liquid reagent) approx. 50-75 Tests	2 41 90 31
Cl^-	KS251 (Chloride Reagent A)	Liquid reagent / 65 ml	56L025165
	KS253 (Chloride Reagent B)	Liquid reagent / 65 ml	56L025365
		Set	56R018490
Cl_2	DPD No. 1	Tablet / 100	51 10 50 BT
	DPD No. 3	Tablet / 100	51 10 80 BT
	Combi pack# DPD No.1 / No.3	each 100	51 77 11 BT
	Combi pack# DPD No.1 / No.3	each 250	51 77 12 BT
	DPD No. 1 HIGH CALCIUM [e]	Tablet / 100	51 57 40 BT
	DPD No. 3 HIGH CALCIUM [e]	Tablet / 100	51 57 30 BT
	Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e]	each 100	51 77 81 BT
	Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e]	each 250	51 77 82 BT
Cl_2	DPD No. 1 HR	Tablet / 100	51 15 00 BT
	DPD No. 3 HR	Tablet / 100	51 15 90 BT

[a] determination of free, combined and total
[b] Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
[c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75)
[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
[j] Vacu-vials® is a Chemetrics Trademark
[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Chlorine [a]	0.02 - 4 mg/l 0.02 - 3 mg/l	530 -	530 -	530 -	530 -	530 -	- -	- 510	DPD [1, 2]	24 mm ø 24 mm ø
Chlorine Powder MR	0,02 - 3,5 mg/l	530	-	530	530	-	-	510	DPD [1, 2]	24 mm ø
Chlorine Powder [a]	0.02 - 2 mg/l 0.1 - 8 mg/l	530 530	- -	530 530	530 -	530 530	- -	510 -	DPD [1, 2]	24 mm ø 24 mm ø multy vial
Chlorine HR (KI)	5 - 200 mg/l	530	-	530	530	-	-	470	KI / Acid [5]	16 mm ø
Chlorine dioxide	0.02 - 11 mg/l 0.05 - 1 mg/l 0.05 - 2.5 mg/l	530 - -	530 - -	530 - -	530 - -	530 - -	- - -	- 510 510	DPD/Glycine [1,2]	24 mm ø 50 mm □ 24 mm ø
Chlorine dioxide Powder	0.04 - 3.8 mg/l	530	-	530	530	-	-	-	DPD [1, 2]	24 mm ø
Chromium (III, VI) [b]	0.005 - 0.5 mg/l 0.02 - 2 mg/l	- -	- -	- 530	- 530	- -	- -	542 542	1,5-Diphenylcarbozide[1, 2]	50 mm □ 16 mm ø
COD LR (ISO 15705:2002)[b]	0 - 150 mg/l	430	430	430	430	-	-	420	Dichromate / H_2SO_4 [1, 2]	16 mm ø
COD MR (ISO 15705:2002)[b]	0 - 1500 mg/l	610	610	610	610	-	-	620	Dichromate / H_2SO_4 [1, 2]	16 mm ø
COD HR [b]	0 - 15000 mg/l	610	610	610	610	-	-	620	Dichromate / H_2SO_4 [1, 2]	16 mm ø
Copper [a]	0.05 - 5 mg/l 0.05 - 1 mg/l 0.3 - 5 mg/l 0.5 - 5 mg/l	560 - 530 -	560 - - -	560 - - -	560 - - -	560 - - -	560 - - -	- 559 - 559	Biquinoline [4]	24 mm ø 50 mm o 24 mm ø 24 mm ø

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[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
Cl_2	DPD 1 Buffer solution DPD 1 Reagent solution DPD 3 Solution	Liquid reagent / 15 ml Liquid reagent / 15 ml Liquid reagent / 15 ml **Set**	47 10 10 47 10 20 47 10 30 47 10 56
Cl_2	VARIO Chlorine FREE-DPD/F10 VARIO Chlorine TOTAL-DPD/F10	Powder Pack / 100 Powder Pack / 100	53 01 80 53 01 90
Cl_2	VARIO Chlorine FREE-DPD/F10 VARIO Chlorine TOTAL-DPD/F10	Powder Pack / 100 Powder Pack / 100	53 01 00 53 01 20
Cl_2	ACIDIFYING GP CHLORINE HR (KI) Combi pack# CHLORINE HR (KI)/ACIDIFYING GP Combi pack# CHLORINE HR (KI)/ACIDIFYING GP	Tablet / 100 Tablet / 100 each 100 each 250	51 54 80 BT 51 30 00 BT 51 77 21 BT 51 77 22 BT
ClO_2	DPD No. 1 DPD No. 3 Combi pack# DPD No.1 / No.3 Combi pack# DPD No.1 / No.3 GLYCINE [f] Combi pack# DPD No.1 / GLYCINE Combi pack# DPD No.1 / GLYCINE DPD No. 1 HIGH CALCIUM [e] DPD No. 3 HIGH CALCIUM [e] Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e] Combi Pack# DPD No.1 / No.3 HIGH CALCIUM [e]	Tablet / 100 Tablet / 100 each 100 each 250 Tablet / 100 each 100 each 250 Tablet / 100 Tablet / 100 each 100 each 250	51 10 50 BT 51 10 80 BT 51 77 11 BT 51 77 12 BT 51 21 70 BT 51 77 31 BT 51 77 32 BT 51 57 40 BT 51 57 30 BT 51 77 81 BT 51 77 82 BT
ClO_2	Chlorine FREE-DPD/F10 GLYCINE [f]	Powder Pack / 100 Tablet / 100	53 01 00 51 21 70 BT
Cr	PERSULF. RTG FOR CR Chromium Hexavalent	Powder Pack / 100 Powder Pack /100	53 73 00 53 73 10
O_2	Reaction tube 0-150 mg/l Reaction tube 0-150 mg/l, mercury free* *without chloride removal	Tube test / 25 Tube test / 25	2 42 07 20 2 42 07 10
O_2	Reaction tube 0-1500 mg/l Reaction tube 0-1500 mg/l, mercury free* *without chloride removal	Tube test / 25 Tube test / 25	2 42 07 21 2 42 07 11
O_2	Reaction tube 0-15000 mg/l Reaction tube 0-15000 mg/l, mercury free* *without chloride removal	Tube test / 25 Tube test / 25	2 42 07 22 2 42 07 12
Cu	COPPER No. 1 COPPER No. 2 Combi pack# COPPER No.1 / No.2 Combi pack# COPPER No.1 / No.2	Tablet / 100 Tablet / 100 each 100 each 250	51 35 50 BT 51 35 60 BT 51 76 91 BT 51 76 92 BT

[a] determination of free, combined and total
[b] Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
[c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75)
[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
[j] Vacu-vials® is a Chemetrics Trademark
[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Copper [a)]	0.05 - 4 mg/l	-	-	560	-	-	-	-	Bicinchoninate	24 mm ø
Copper, free VARIO	0.05 - 5 mg/l	560	-	560	560	560	-	560	Bicinchoninate	24 mm ø
Cyanide	0.01 - 0.5 mg/l 0.005 - 0.2 mg/l	- -	- -	580 -	580 -	- -	- -	585 585	Pyridine-barbituric acid [1]	24 mm ø 50 mm □
Cyanuric acid	0 - 160 mg/l	530	530	530	530	530	530	530	Melamine	24 mm ø
DEHA	20 - 500 µg/l	-	-	560	560	-	-	562	PPST [3]	24 mm ø
DEHA VARIO	20 - 500 µg/l	560	-	560	560	-	-	562	PPST [3]	24 mm ø
Fluoresceine (only MD 640)	10 - 400 ppb			> 395					Fluorescence	24 mm ø
Fluoride	0.05 - 2 mg/l 0.05 - 1.5 mg/l	580 -	- -	580 -	580 -	- -	- -	- 580	SPADNS [2]	24 mm ø
Formaldehyde	1 - 5 mg/l 0.02 - 1 mg/l	- -	- -	- -	- -	- -	- -	585 585	H_2SO_4/ Chromotropic acid	10 mm □ 50 mm □
Formaldehyde	0.1 - 5 mg/l	-	-	-	-	-	-	575	H_2SO_4/ Chromotropic acid	16 mm ø
Hardness, calcium	50 - 900 mg/l	-	-	560	560	-	-	-	Murexide [4]	24 mm ø
Hardness, calcium	0 - 500 mg/l	560	560	560	560	560	560	-	Murexide [4]	24 mm ø
Hardness, total	2 - 50 mg/l 20 - 500 mg/l [1)]	560 560	- -	560 560	560 560	560 560	- -	571 571	Metallphthalein [3]	24 mm ø
Hazen (Pt-Co-units ; APHA)	0 - 500 mg/l 0 - 500 mg/l	430 -	- -	430 -	430 -	- -	- -	- 455	Direct reading [1, 2]	24 mm ø 50 mm □

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[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
Cu	KS240 (Coppercol Reagent 1) KS241 (Coppercol Reagent 2) KS242 (Coppercol Reagent 3) COPPER No.2	Liquid reagent / 30 ml Liquid reagent / 30 ml Powder / 10 g Tablet / 100 **Set**	56L024030 56L024130 56L024210 51 35 60 BT 56R023355
Cu	Vario Cu 1 F10	Powder Pack / 100	53 03 00
CN	Cyanid-11 / Cyanid-12 / Cyanid-13	Reagent test (Powder, Liquid reagent) / 200 Tests	2 41 88 75
Cys	CyA-TEST	Tablet / 100	51 13 70 BT
DEHA	DEHA Solution DEHA	Liquid reagent / 100 ml Tablet / 100	46 11 81 51 32 20 BT
DEHA	VARIO OXYSCAV 1 RGT VARIO DEHA 2 RGT	Powder Pack / 200 Solution / 100 ml **Set**	 53 60 00
Fluoresceine	no reagents required		
F	SPADNS Reagent Fluoride Standard Reagent solution and standard required	Liquid reagent / 250 ml Liquid reagent / 500 ml Solution / 30 ml	46 74 81 46 74 82 20 56 30
HCHO	Spectroquant® 1.14678.0001[d]	Reagent test / ca. 50-75 Tests	42 07 51
HCHO	Spectroquant® 1.14500.0001[d]	Tube test / 25	42 07 52
$CaCO_3$	CALCHECK	Tablet / 100	51 56 50 BT
$CaCO_3$	Combi pack# CALCIO H No.1 / No.2 Combi pack# CALCIO H No.1 / No.2	each 100 each 250	51 77 61 BT 51 77 62 BT
$CaCO_3$	HARDCHECK P	Tablet / 100 Tablet / 250	51 56 60 BT 51 56 61 BT
Pt-Co-units	no reagents required	-	-

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[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
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Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Hydrazine	0.05 - 0.5 mg/l	430	-	430	430	-	-	455	Dimethylamino-benzaldehyde [3]	24 mm ø
Hydrazine	0.01 - 0.6 mg/l 0.005 - 0.6 mg/l	- -	- -	430 -	430 -	- -	- -	- 455	Dimethylamino-benzaldehyde [3]	24 mm ø
Hydrazine [c)]	0.01 - 0.7 mg/l	-	-	430	430	-	-	-	PDMAB	24 mm ø
Hydrogen peroxide	0.03 - 3 mg/l 0.01 - 0.5 mg/l 0.03 - 1.5 mg/l	- - -	- - -	530 - -	530 - -	530 - -	- - -	- 510 510	DPD/Catalyst [5]	24 mm ø 50 mm □ 24 mm ø
Hydrogen peroxide	1 - 50 mg/l 40 - 500 mg/l [i)]	- -	430 530	430 530	430 530	- 530	- -	- -	Peroxotitanium acid	24 mm ø
Iodine	0.05 - 3.6 mg/l	-	-	530	530	530	-	510	DPD [5]	24 mm ø
Iron (II, III) soluble	0.02 - 1 mg/l 0.01 - 0.5 mg/l 0.1 - 1 mg/l	560 - -	560 - -	560 - -	560 - -	560 - -	560 - -	- 562 562	PPST [3]	24 mm ø 50 mm □ 10 mm □
Iron VARIO (II, III) soluble	0.02 - 3 mg/l 0.1 - 3 mg/l	530 -	- -	530 -	530 -	- -	- -	- 510	1,10-Phenanthroline [2]	24 mm ø
Iron VARIO, total [g)]	0.02 - 1.8 mg/l 0.1 - 1.8 mg/l	580 -	- -	580 -	580 -	- -	- -	- 590	TPTZ [g)]	24 mm ø
Iron LR ($Fe^{2+/3+}$)	0.03 - 2.0 mg/l 0.03 - 2.0 mg/l	560 530	-	560	-	-	-	-	Ferrozine / Thioglycolate	24 mm ø
Iron LR 2 ($Fe^{2+}$and Fe^{3+})	0.03 - 2.0 mg/l	-	-	560	-	-	-	-	Ferrozine / Thioglycolate	24 mm ø
Iron HR	0.1 - 10 mg/l	-	-	530	-	-	-	-	Thioglycolate	24 mm ø

MSDS (Material Safety Data Sheets): www.lovibond.com

For other reagent quantities please see our current price list.

Legend

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[3] Photometrische Analysenverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart; 1989
[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980
[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
N_2H_4	Hydrazine Test Powder Spoon	Powder / 30 g	46 29 10 38 49 30
N_2H_4	VARIO Hydra 2 Rgt Solution	Solution / 100 ml	53 12 00
N_2H_4	Vacu-vial® [j]	Test Kit / 30 Adapter for Vacu-vials® [j]	38 04 70 19 20 75
H_2O_2	HYDROGENPEROXIDE LR	Tablet / 100	51 23 80 BT
H_2O_2	H_2O_2 reagent solution	Liquid reagent / 15 ml	42 49 91
I	DPD No. 1	Tablet / 100	51 10 50 BT
Fe	IRON LR (Fe^{2+} and Fe^{3+}) IRON (II) LR (Fe^{2+})	Tablet / 100 Tablet / 100	51 53 70 BT 51 54 20 BT
Fe	VARIO Ferro F10	Powder Pack / 100	53 05 60
Fe	VARIO IRON TPTZ F10	Powder Pack / 100	53 05 50
Fe	KS61 (Ferrozine / Thioglycolate, FE5) KS63 (Thioglycolate Reagenz, FE6) KP962 (Ammonia Persulphate Powder) KS135 (Phenolphthalein / Indicator) KS144 (Calcium Hardness Buffer)	Liquid reagent / 65 ml Liquid reagent / 65 ml Powder Liquid reagent / 65 ml Liquid reagent / 65 ml	56L006165 56L006365 56P096240 56L013565 56L014465
Fe	KS60 FE1 (Acetate Buffer) KS63 FE6 (Thioglycolate Reagent) KS65 FE7 (Ferrozine Reagent)	Liquid reagent / 65 ml Liquid reagent / 65 ml Liquid reagent / 65 ml **Set**	56L006065 56L006365 56L006565 56R023490
Fe	KS160 TH2 FE8 (Total Hardness Buffer) KS63 FE6 (Thioglycolate Reagent)	Liquid reagent / 65 ml Liquid reagent / 65 ml **Set**	56L016065 56L006365 56R023590

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[b] Thermoreactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C)
[c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75)
[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
[j] Vacu-vials® is a Chemetrics Trademark
[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Iron, total, Fe in Mo	0.01 - 1.8 mg/l	580	-	580	-	-	-	-	Fe in Mo	24 mm ø
Lead (Pb^{2+})	0.1 - 5 mg/l	-	-	-	-	-	-	520	4-(2-Pyridylazo)-resorcine	10 mm □
Lead (Pb^{2+})	0.1 - 5 mg/l	-	-	-	-	-	-	515	4-(2-Pyridylazo)-resorcine	16 mm ø
Manganese	0.2 - 4 mg/l	530	-	530	530	-	-	450	Formaldoxime	24 mm ø
Manganese VARIO LR	0.01 - 0.7 mg/l	560	-	560	560	-	-	558	PAN	24 mm ø
Manganese VARIO HR	0.1 - 18 mg/l	530	-	530	530	-	-	525	Periodate oxidation [2]	24 mm ø
Manganese	0.05 - 5 mg/l	-	-	430	-	-	-	-	Formaldoxime	24 mm ø
Molybdate / Molybdenum	1 - 50 mg/l 1 - 30 mg/l 0.6 - 30 mg/l	- - 430	- - -	430 - -	430 - -	- - -	- - -	- 366 -	Thioglycolate [4]	24 mm ø
Molybdate / Molybdenum VARIO LR	0.5 - 5 mg/l 0.03 - 3 mg/l	- 610	- -	610 -	610 -	- -	- -	610 -	Mercaptoacetic acid	24 mm ø
Molybdate / Molybdenum VARIO HR	0.5 - 66 mg/l 0.3 - 40 mg/l	- 430	- -	430 -	430 -	- -	- -	420 -	Mercaptoacetic acid	24 mm ø
Molybdate / Molybdenum HR	1 - 100 mg/l 0.6 - 60 mg/l	- 430	- -	430 -	- -	- -	- -	- -	Thioglycolate [4]	24 mm ø
Nickel	0.02 - 1 mg/l 0.2 - 7 mg/l	- -	- -	- 430	- 430	- -	- -	443 443	Dimethylglyoxime [2, 3]	50 mm □ 24 mm ø

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Display	Reagent	Form of reagent/Quantity	Order code
Fe	VARIO (Fe in Mo) Rgt 1 VARIO (Fe in Mo) Rgt 2	Powder Pack / 100 Powder Pack / 100 **Set**	53 03 10 53 03 20 53 60 10
Pb	Spectroquant® 1.09717.0001[d]	Reagent test / 50 Tests	42 07 53
Pb	Spectroquant® 1.14833.0001[d]	Tube test / 25	42 07 54
Mn	MANGANESE LR 1 MANGANESE LR 2 Combi pack# MANGANESE LR 1 / LR 2 Combi pack# MANGANESE LR 1 / LR 2	Tablet / 100 Tablet / 100 each 100 each 250	51 60 80 BT 51 60 90 BT 51 76 21 BT 51 76 22 BT
Mn	VARIO Ascorbic Acid VARIO Alkaline-Cyanide VARIO PAN Indicator VARIO Rochelle Salt Solution [h]	Powder Pack / 100 Liquid reagent / 60 ml Liquid reagent / 60 ml **Set** 30 ml	 53 50 90 53 06 40
Mn	VARIO Manganese Citrate Puffer F10 VARIO Sodiumperiodate F10	Powder Pack / 100 Powder Pack / 100 **Set**	 53 51 00
Mn	KS265 Manganese Reagent A KS266 Manganese Reagent B KS267 Manganese Reagent C	Liquid reagent / 30 ml Liquid reagent / 30 ml Liquid reagent / 30 ml **Set**	56L026530 56L026630 56L030430 56R024055
MoO_4 MoO_4 Mo	MOLYBDATE No.1 HR MOLYBDATE No.2 HR Combi pack# MOLYBDATE No.1 HR / No.2 HR Combi pack# MOLYBDATE No.1 HR / No.2 HR	Tablet / 100 Tablet / 100 each 100 each 250	51 30 60 BT 51 30 70 BT 51 76 31 BT 51 76 32 BT
MoO_4 Mo	VARIO Molybdenum 1 LR F20 VARIO Molybdenum 2 LR required accessory: mixing cylinder (not included)	Powder Pack / 100 Liquid reagent/ 50 ml **Set**	 53 54 50
MoO_4 Mo	VARIO Molybdenum HR1 F10 VARIO Molybdenum HR2 F10 VARIO Molybdenum HR3 F10	Powder Pack / 100 Powder Pack / 100 Powder Pack / 100 **Set**	 53 53 00
MoO_4	KS63 (Thioglycolate Reagent)	Liquid reagent / 65 ml	56L006365
Ni	Nickel-51, Nickel-52	Reagent test (Powder, Liquid reagent) / 50 Tests	2 41 90 33

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[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Nickel	0.1 - 10 mg/l	-	-	560	560	-	-	-	Nioxime	24 mm ø
Nitrate	0.08 - 1 mg/l 0,35 - 4,4 mg/l	- -	- -	530 530	- -	- -	- -	- -	Zinc reduction / NED	24 mm ø
Nitrate VARIO	1 - 30 mg/l 4,4 - 132 mg/l	- -	- -	430 430	430 430	- -	- -	410 410	Chromotropic acid	16 mm ø
Nitrate	0.5 - 14 mg/l 2,2 - 62 mg/l	- -	- -	- -	- -	- -	- -	340 340	2,6-Dimethylphenole [3]	16 mm ø
Nitrite	0.01 - 0.5 mg/l 0,03 - 0,16 mg/l	- -	- -	560 560	560 560	- -	- -	545 545	N-(1-Naphthyl)-ethylenediamine [2,3]	24 mm ø
Nitrite	0.03 - 0.6 mg/l 0,1 - 2 mg/l 0.3 - 3 mg/l 1 - 10 mg/l	- - 	- - 	- - 	- - 	- - 	- - 	545 545 545 545	Sulfanilic/Naphthylamine [1]	16 mm ø
Nitrite LR VARIO	0.01 - 0.3 mg/l 0,03 - 1 mg/l	-	-	530 530	530 530	-	-	507 507	Diazotation	24 mm ø
Nitrogen-total [b)]	0.5 - 14 mg/l 5 - 140 mg/l [i)]	-	-	-	-	-	-	340	2,6-Dimethylphenole 2,3	16 mm ø
Nitrogen VARIO, total LR [b)]	0.5 - 25 mg/l	-	-	430	430	-	-	410	Persulphate-digestion method	16 mm ø
Nitrogen VARIO, total HR [b)]	5 - 150 mg/l	-	-	430	430	-	-	410	Persulphate-digestion method	16 mm ø

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Display	Reagent	Form of reagent/Quantity	Order code
Ni	NICKEL No.1 NICKEL No.2	Tablet / 100 Tablet / 100	51 56 30 BT 51 56 40 BT
NO_3 - N NO_3	NITRATE TEST Powder NITRATE TEST Tablet NITRITE LR Nitrate test tube	Powder / 15 g Tablet / 100 Tablet / 100	46 52 30 50 28 10 51 23 10BT 36 62 20
NO_3 - N NO_3	VARIO Nitrate Chromotropic VARIO Nitra X Reagent tube VARIO Deionised Water (for Zero)	Powder Pack / 50 Reaction tube / 50 Bottle, 100 ml Set (Tube test)	 53 55 80
NO_3 - N NO_3	Reaction tube, Nitrat-111	Tube test Liquid reagent / 24	2 42 07 02
NO_2 - N NO_2	NITRITE LR	Tablet / 100	51 23 10 BT
NO_2 - N NO_2 NO_2 - N NO_2	Reaction tube, Nitrit-101	Tube test (Powder) / 24	2 41 90 18
NO_2 - N NO_2	VARIO Nitri 3	Powder Pack / 100	53 09 80
N	Digestion reagent, Compensation reagent, Nitrat-111	Tube test (Powder, Liquid reagent) / 24	2 42 07 03
N	VARIO TN HYDROX. LR Tubes VARIO PERSULFATE Reagent VARIO TN Reagent A VARIO TN Reagent B VARIO TN ACID LR/HR Tubes VARIO Deionised Water (for Zero)	Digestion tubes / 50 Powder Pack / 50 Powder Pack / 50 Powder Pack / 50 Reaction tubes / 50 Bottle, 100 ml **Set** (Tube test)	 53 55 50
N	VARIO TN HYDROX. HR Tubes VARIO PERSULFATE Reagent VARIO TN Reagent A VARIO TN Reagent B VARIO TN ACID LR/HR Tubes VARIO Deionised Water (for Zero)	Digestion tubes / 50 Powder Pack / 50 Powder Pack / 50 Powder Pack / 50 Reaction tubes / 50 Bottle, 100 ml **Set** (Tube test)	 53 55 60

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Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Oxygen, activ	0.1 - 10 mg/l	-	-	530	530	530	-	-	DPD	
Oxygen, dissolved [c]	10 - 800 µg/l	530	-	530	530	-	-	-	Rhodazine D ™	13 mm ø
Ozone	0.02 - 1 mg/l 0.02 - 0.5 mg/l 0.02 - 2 mg/l	- - 530	- - -	- - 530	- - 530	- - 530	- - 530	510 510 -	DPD/Glycine [5]	24 mm ø 50 mm □ 24 mm ø
Phenols	0.1 - 5 mg/l	-	-	-	-	-	-	507	4-Aminoantipyrine [1]	24 mm ø
PHMB (Biguanide)	2 - 60 mg/l	-	-	560	560	560	-	-	Buffer/Indicator	24 mm ø
Phosphate-total LR [b]	0.07 - 3 mg/l 0.2 - 10 mg/l	- -	- -	- -	- -	- -	- -	690 690	Phosphomolybdic acid/ Ascorbic acid [2]	16 mm ø
Phosphate-total HR [b]	1.5 - 20 mg/l 5 - 60 mg/l	- -	- -	- -	- -	- -	- -	690 690	Phosphomolybdic acid/ Ascorbic acid [2]	16 mm ø
Phosphate LR, ortho	0.016 - 1,3 mg/l 0.05 - 4 mg/l	660 660	- -	660 660	660 660	610 610	610 610	710 710	Phosphomolybdic acid/ Ascorbic acid [2]	24 mm ø
Phosphate HR, ortho	0,33 - 26 mg/l 1 - 80 mg/l	- -	- -	430 430	430 430	- -	- -	470 470	Vanadomolybdate [2]	24 mm ø
Phosphate VARIO ortho	0.02 - 0,83 mg/l 0.06 - 2.5 mg/l	660 660	- -	660 660	660 660	- -	- -	890 890	Phosphomolybdenum blue/ Ascorbic acid [2]	24 mm ø
Phosphate VARIO ortho	0.02 - 1,6 mg/l 0.06 - 5 mg/l	- -	- -	660 660	660 660	- -	- -	890 890	Phosphomolybdenum blue/ Ascorbic acid [2]	16 mm ø
Phosphate-ortho	1 - 20 mg/l 3 - 60 mg/l	- -	- -	- -	- -	- -	- -	438 438	Vanadomolybdate [2]	16 mm ø

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Display	Reagent	Form of reagent/Quantity	Order code
O_2	DPD No. 4	Tablet / 100	51 12 20 BT
O_2	Vacu-vial® [j]	Liquid reagent / 30 Adapter for Vacu-vials® [j]	38 04 50 19 20 75
O_3	DPD No. 1 DPD No. 3 Combi pack# DPD No.1 / No.3 Combi pack# DPD No.1 / No.3 GLYCINE [f] Combi pack# DPD No.1 / GLYCINE Combi pack# DPD No.1 / GLYCINE	Tablet / 100 Tablet / 100 each 100 each 250 Tablet / 100 each 100 each 250	51 10 50 BT 51 10 80 BT 51 77 11 BT 51 77 12 BT 51 21 70 BT 51 77 31 BT 51 77 32 BT
$C_6H_5O_H$	PHENOLE No. 1 PHENOLE No. 2	Tablet / 100 Tablet / 100	51 59 50 BT 51 59 60 BT
PHMB	PHMB PHOTOMETER	Tablet / 100	51 61 00 BT
PO_4 - P PO_4	Reaction tube, Phosphat-101, Phosphat- 102, Phosphat-103	Tube test (Powder, Liquid reagent) / 24	2 41 90 19
PO_4 - P PO_4	Reaction tube, Phosphat-101, Phosphat-102, Phosphat-103	Tube test (Powder, Liquid reagent) / 24	2 42 07 00
PO_4 - P PO_4	PHOSPHATE No. 1 LR PHOSPHATE No. 2 LR Combi pack# PHOSPHATE No.1 LR / No.2 LR	Tablet / 100 Tablet / 100 each 100	51 30 40 BT 51 30 50 BT 51 76 51 BT
PO_4 - P PO_4	PHOSPHATE No. 1 HR PHOSPHATE No. 2 HR Combi pack# PHOSPHATE No.1 HR / No.2 HR	Tablet / 100 Tablet / 100 each 100	51 58 10 BT 51 58 20 BT 51 76 61 BT
PO_4 - P PO_4	VARIO PHOSPHATE RGT, F10	Powder Pack / 100	53 15 50
PO_4 - P PO_4	VARIO Dilution Vial VARIO PHOSPHATE RGT, F10 VARIO Deionised Water (for Zero)	50 Tubes Powder Pack / 50 Bottle, 100 ml **Set** (Tube test)	 53 52 00
PO_4 - P PO_4	Reaction tube	Tube test / 24	2 42 07 01

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Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Phosphate VARIO [b] acid hydrolyzable and total	acid hydrolyzable: 0.02 - 1.6 mg/l 0.06 - 5 mg/l total: 0.02 - 1.1 mg/l 0.06 - 3.5 mg/l	-	-	660	660	-	-	890	Acid digestion Phosphomolybdenum blue/ Ascorbic acid [2] Acid-/ Persulphate digestion Phosphomolybdic acid/ Ascorbic acid [2]	16 mm ø 16 mm ø
Phosphate VARIO total [b]	0.02 - 1.1 mg/l 0.06 - 3.5 mg/l	-	-	660	660	-	-	890	Acid-/ Persulphate digestion Ascorbic acid [2]	16 mm ø 16 mm ø
Phosphate, ortho [c]	1,6 - 13 mg/l 5 - 40 mg/l	- -	- -	430 430	430 430	- -	- -	- -	Vanadomolybdate [2]	
Phosphate, ortho [c]	0.016 - 1,6 mg/l 0.05 - 5 mg/l	- -	- -	660 660	660 660	- -	- -	- -	Stannous chloride [2]	
Phosphate LR	0.033 - 3,3 mg/l 0.1 - 10 mg/l	- -	- -	660 660	- -	- -	- -	- -	Phosphomolybdic acid/ Ascorbic acid [2]	24 mm ø
Phosphate HR, ortho	1,63 - 26 mg/l 5 - 80 mg/l	430 430	- -	430 430	- -	- -	- -	- -	Vanadomolybdate [2]	24 mm ø
Phosphonate VARIO	0.02 - 125 mg/l	-	-	660	660	-	-	660	Persulfate UV-Oxidation	24 mm ø
pH value	5.2 - 6.8	-	-	560	560	560	-	-	Bromcresol purple [5]	24 mm ø
pH value	6.5 - 8.4	560	560	560	560	560	560	558	Phenol red [5]	24 mm ø
pH value	6.5 - 8.4	560	560	560	560	560	-	558	Phenol red [5]	24 mm ø
pH value	8.0 - 9.6	-	-	560	560	560	-	-	Thymol blue [5]	24 mm ø

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Display	Reagent	Form of reagent/Quantity	Order code
	VARIO Acid Reagent Vial	50 Tubes	
PO_4 - P	VARIO PHOSPHATE RGT, F10	Powder Pack / 50	
PO_4	VARIO Deionised Water (for Zero)	Bottle, 100 ml	
	1N NaOH	Bottle / 100 ml	
PO_4 - P	1,54 N NaOH	Bottle / 100 ml	
PO_4	VARIO Potassium Persulfate F10	Powder Pack / 50	
		Set (Tube test)	53 52 50
PO_4 - P	VARIO Acid Reagent Vial	50 Tubes	
	VARIO PHOSPHATE RGT, F10	Powder Pack / 50	
PO_4	VARIO Deionised Water (for Zero)	Bottle, 100 ml	
	1,54 N NaOH	Bottle / 100 ml	
	VARIO Potassium Persulfate F10	Powder Pack / 50	
		Set (Tube test)	53 52 10
PO_4 - P	Vacu-vial® [j]	Test Kit / 30	38 04 60
PO_4		Adapter for Vacu-vials® [j]	19 20 75
PO_4 - P	Vacu-vial® [j]	Test Kit / 30	38 04 80
PO_4		Adapter for Vacu-vials® [j]	19 20 75
PO_4 - P	KS80 (CRP Reagent)	Liquid reagent / 2 x 65 ml	56L008065
PO_4	KP119 (Ascorbic acid)	Powder / 20 g	56P011920
		Set	56R023765
PO_4 - P	KS228 (Ammonia Molybdate)	Liquid reagent / 65 ml	56L022865
PO_4	KS229 (Ammonia Metavanadate)	Liquid reagent / 65 ml	56L022965
		Set	56R019090
	Option Polyphosphate		
	KS278 (50 % Sulfuric Acid)	Liquid reagent / 65 ml	56L027865
	KS135 (Phenolphthalein Indicator)	Liquid reagent / 65 ml	56L013565
	KS144 (Calcium Hardness Buffer)	Liquid reagent / 65 ml	56L014465
	KP962 (Ammonium Persulphate Powder)	Powder / 40 g	56P096240
PO_4	VARIO Potassium Persulfate F10	Powder Pack / 100	
	VARIO PHOSPHATE RGT, F10	Powder Pack / 200	
		Set	53 52 20
pH	BROMOCRESOLPURPLE/PHOTOMETER	Tablet / 100	51 57 00 BT
pH	PHENOLRED / PHOTOMETER	Tablet / 100	51 17 70 BT
pH	PHENOLRED Solution	Liquid reagent / 15 ml	47 10 40
pH	THYMOLBLUE / PHOTOMETER	Tablet / 100	51 57 10 BT

[a] determination of free, combined and total
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[c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75)
[d] Spectroquant® is a Merck KGaA Trademark
[e] alternative reagent, used instead of DPD No.1 / DPD No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity
[f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine
[g] Reagent recovers most insoluble iron oxides without digestion
[h] additionally required for samples with hardness values above 300 mg/l $CaCO_3$
[i] high range by dilution
[j] Vacu-vials® is a Chemetrics Trademark
[#] including stirring rod

Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Polyacrylates	1 - 30 mg/l	530	-	660	-	-	-	-	Turbidity	24 mm ø
Potassium	0.7 - 12 mg/l	-	-	430	430	-	-	-	Tetraphenylborate-	24 mm ø
	1 - 10 mg/l	-	-	-	-	-	-	730	Turbidity [4]	24 mm ø
PTSA (only MD 640)	10 - 1000 ppb			> 395					Fluorescence	24 mm ø
Silica	0.05 - 4 mg/l	660	-	660	660	-	-	-	Silicomolybdate [2,3]	24 mm ø
	0.05 - 3 mg/l	-	-	-	-	-	-	820		
Silica VARIO LR	0.1 - 1.6 mg/l	660	-	660	660	-	-	815	Heteropolyblue [2]	24 mm ø
Silica VARIO HR	1 - 90 mg/l	430	-	430	430	-	-	-	Silicomolybdate [2,3]	24 mm ø
	1 - 100 mg/l	-	-	-	-	-	-	452		24 mm ø
Silica	0.1 - 8 mg/l	-	-	430	-	-	-	-	Heteropolyblue [2]	24 mm ø
Sodiumhypochlorite	0.2 - 16 %	-	-	530	530	530	530	-	Potssium iodide [5]	24 mm ø
Spectral Absorption-coefficient	0 - 50 m^{-1}	-	-	-	-	-	-	436	Direct reading [1]	50 mm □
		-	-	-	-	-	-	525	ISO 7887:1994	
		-	-	-	-	-	-	620		
Sulphate VARIO	5 - 100 mg/l	530	-	530	530	530	-	-	Bariumsulphate Turbidity [2]	24 mm ø
	2 - 100 mg/l	-	-	-	-	-	-	450		
	50 - 1000 mg/l	-	-	530	530	-	-	530		

MSDS (Material Safety Data Sheets): www.lovibond.com

For other reagent quantities please see our current price list.

Legend

[1] Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlamm- Untersuchung
[2] Standard Methods for the Examination of Water and Wastewater, 18th Edition; 1992
[3] Photometrische Analysenverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart; 1989
[4] Photometrische Analyse, Lange/Vejdelek, Verlag Chemie; 1980
[5] Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond®

Display	Reagent	Form of reagent/Quantity	Order code
Polyacryl	KS255 (Polyacrylate Reagent 1) KS256 (Polyacrylate Reagent 2) KS336 (Propan-2-ol) C18 (Cartouche) KS173 (2,4 Dinitrophenol) KT183 (Nitric Acid)	Liquid reagent / 65 ml Liquid reagent / 65 ml **Set** Liquid reagent / 65 ml Liquid reagent / 65 ml Liquid reagent / 65 ml	56L025565 56L025665 56R019165 56L033665 56A020101 56L017365 56L018365
K	POTASSIUM T	Tablet / 100	51 56 70
PTSA	no reagents required		
SiO_2	SILICA No. 1 SILICA No. 2 Combi pack# SILICA No.1 / No.2 Combi pack# SILICA No.1 / No.2 SILICA PR	Tablet / 100 Tablet / 100 each 100 each 250 Tablet / 100	51 31 30 BT 51 31 40 BT 51 76 71 BT 51 76 72 BT 51 31 50 BT
SiO_2	VARIO Amino Acid F10 VARIO Citric Acid F10 VARIO Molybdate 3 Reagent solution	Powder Pack / 100 Powder Pack / 200 Liquid reagent / 2 x 50 ml **Set**	 53 56 90
SiO_2	VARIO Silica HR Molybdate F10 VARIO Silica HR Acid Rgt F10 VARIO Silica HR Citric Acid F10	Powder Pack / 100 Powder Pack / 100 Powder Pack / 100 **Set**	 53 57 00
SiO_2	KS104 (Silica Reagent 1) KS105 (Silica Reagent 2) KP106 (Silica Reagent 3)	Liquid reagent / 65 ml Liquid reagent / 65 ml Powder / 10 g **Set**	56L010465 56L010565 56P010610 56R023856
NaOCl	ACIDIFYING GP CHLORINE HR (KI) Combi pack# CHLORINE HR (KI)/ACIDIFYING GP Combi pack# CHLORINE HR (KI)/ACIDIFYING GP Dilution set for sample preparation	Tablet / 100 Tablet / 100 each 100 each 250 1 set	51 54 80 BT 51 30 00 BT 51 77 21 BT 51 77 22 BT 41 44 70
-	no reagents required	-	-
SO_4	VARIO Sulpha 4 / F10	Powder Pack / 100	53 21 60

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Reagents

Test	Range	Wave lengths λ / nm: MD 100 & MD 110	MD 200	MD 600, MD 610 & MD 640	MultiDirect	PM 620 & PM 630	PM 600	SpectroDirect	Method	Cuvette
Sulphate	5 - 100 mg/l	-	-	610	610	610	-	-	Bariumsulphate Turbidity [2]	24 mm ø
Sulphide	0.04 - 0.5 mg/l	-	-	660	660	-	-	668	DPD/Catalyst [3, 4]	24 mm ø
Sulphite	0.1 - 5 mg/l 0.1 - 10 mg/l 0.05 - 4 mg/l	- - -	- - -	430 - -	430 - -	- - -	- - -	- 405 405	DTNB	24 mm ø 10 mm o 24 mm ø
Surfactants (anionic)	0,05 - 2 mg/l	-	-	660	660	-	-	660	Methylene blue[1]	16 mm ø
Surfactants (cationic)	0,05 - 1,5 mg/l	-	-	610	610	-	-	610	Disulphine blue	16 mm ø
Surfactants (non ionic)	0,1 - 7,5 mg/l	-	-	610	610	-	-	610	TBPE	16 mm ø
Suspended solids	5 - 750 mg/l	660	-	660	660	-	-	- 660	Turbidity/Attenuated Radiation	24 mm ø 50 mm □
TOC [b)]	5 - 80 mg/l	-	-	-	-	-	-	596	H_2SO_4/ Indicator	16 mm ø
TOC [b)]	50 - 800 mg/l	-	-	-	-	-	-	596	H_2SO_4/ Indicator	16 mm ø
Triazoles (UV lamp requested)	1 - 16 mg/l	430	-	430	-	-	-	-	Catalyzed UV Digestion	24 mm ø
Turbidity	5 - 500 0 - 1000	- -	- -	- 530	- 530	- -	- -	860 -	Attenuated Radiation Method Attenuated Radiation Method	50 mm □ 24 mm ø
Urea	0.1 - 2.5 mg/l 0.2 - 5 mg/l [1)] 0.1 - 2 mg/l	610 610 -	610 610 -	610 - -	610 - -	610 - -	- - -	- - 676	Urease / Indophenol	24 mm ø
Zinc	0.02 - 1 mg/l 0.02 - 0.5 mg/l	- -	- -	610 -	610 -	- -	- -	- 616	Zincon[3]/EDTA	24 mm ø
Zinc	0.1 - 2.5 mg/l	-	-	610	-	-	-	-	Zincon[3]/EDTA	24 mm ø

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Display	Reagent	Form of reagent/Quantity	Order code
SO_4	SULFATE T	Tablet / 100	51 54 50 BT
S	SULFIDE No. 1 SULFIDE No. 2	Tablet / 100 Tablet / 100	50 29 30 50 29 40
SO_3	SULFITE LR	Tablet / 100	51 80 20 BT
MBAS	Spectroquant® 1.02552.0001	Tube test / 25	42 07 63
CTAB	Spectroquant® 1.01764.0001	Tube test / 25	42 07 65
Triton® X-100	Spectroquant® 1.01787.0001	Tube test / 25	42 07 64
-	no reagents required	-	-
TOC	Spectroquant® 1.14878.0001[d]	Tube test / 25 Aluminium screwcaps / 6 pc.	42 07 61 42 07 57
TOC	Spectroquant® 1.14879.0001[d]	Tube test / 25 Aluminium screwcaps / 6 pc.	42 07 56 42 07 57
Benzotriazole	VARIO Triazole Rgt F25	Powder Pack / 100	53 22 00
FAU FAU	no reagents required	-	-
CH_4N_2O	UREA Reagent 1 UREA Reagent 2 AMMONIA No. 1 AMMONIA No. 2 Combi pack# AMMONIA No.1 / No.2 Combi pack# AMMONIA No.1 / No.2 UREA PRETREAT (compensates for the interference of free Chlorine up to 2 mg/l) UREA Reagent Set, contains: UREA Reagent 1/2, AMMONIA No.1/2, UREA PRETREAT	Liquid reagent / 15 ml Liquid reagent / 10 ml Tablet / 100 Tablet / 100 each 100 each 250 Tablet / 100 **Set**	45 93 00 45 94 00 51 25 80 BT 51 25 90 BT 51 76 11 BT 51 76 12 BT 51 61 10 BT 51 78 00 BT
Zn	COPPER/ZINC LR EDTA DECHLOR (in case of high levels of residual chlorine)	Tablet / 100 Tablet / 100 Tablet / 100	51 26 20 BT 51 23 90 BT 51 23 50 BT
Zn	KS243 (Zinc Reagent 1) KP244 (Zinc Reagent 2)	Liquid reagent / 65 ml Powder / 20 g **Set**	56L024365 56L024420 56R023965

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